

DOCKET NO.: SUG-017-USA-PCT

**REMARKS**

The Examiner is thanked for the very thorough and professional Office Action. In particular, the Examiner is thanked for referring to the specific portions of the references upon which the Examiner relies. Pursuant to the Office Action Claims 10-12 have been rewritten to more definitely set forth the invention and obviate the rejection. Support for the amendment of Claims 10-12 can be found in Figures 9-12. The present amendment is deemed not to introduce new matter. Claims 10-12 and 14-19 remain in the application, claims 14-19 having been previously withdrawn from prosecution as being directed to a non-elected invention.

Reconsideration is respectfully requested of the rejection of Claims 10 and 11 under 35 U.S.C. 102(b) as being anticipated by Bielfeldt, et al. (USP 3,464,091).

The present invention as now called for in amended Claims 10 and 11 relates to a low pressure injection molding method for forming an elongated molded article in a vertically disposed single mold cavity having a plurality of vertically disposed resin supply ports. This method comprises the steps of (a) moving an injection portion to a low vertically disposed resin supplying port in communication with a single mold cavity for the elongated article to be formed. Then, (b) injecting at low pressure molten resin from the injection portion into the vertically disposed mold. Thereafter, (c) moving an injection portion to a next lowest resin supply port and (d) injecting at low pressure molten resin into the vertically disposed mold. Thereafter, steps (c) and (d) are repeated until the mold cavity is filled with resin. Claim 11 further restricts the method to carrying out the first injection of molten resin into the lowest resin supply port in the

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vertically disposed mold.

The specification points out that other low pressure molding methods have been employed in order to reduce the mold clamping force, i.e., a mold clamping unit being used to clamp a metal mold using high pressure. However, in these other low pressure molding methods since there still exists a need of making the molten resin to go or spread around all over and within the mold cavity, it is impossible to sufficiently lower the injection pressure (by extension, the average resin pressure within the metal mold), and there is a limit in lowering the mold clamping force (Specification, page 1, lines 11-25, and page 2, lines 3-20).

Independent Claim 10 as rewritten is now restricted to a low pressure molding method for forming an elongated molded article in a vertically disposed single mold cavity having a plurality of vertically disposed resin supply ports.

In contrast, the Bielfeldt reference is concerned with an injection molding machine which injects molten resin sequentially into a multi-stage mold unit. This mold unit illustrated in Figs. 2-5 contains multiple cavities for molding multiple articles. However, there appears to be only one resin supplying port to each of the mold cavities. In Fig. 1, Bielfeldt illustrates an injection molding machine which comprises three identical two-stage molding units, 1, 2 and 3. The construction of the mold unit 1 is shown in Figs. 2 and 3 (column 3, lines 12-15). Cavities 7, and 8 are, respectively, provided with inlets 7a and 8a which face the vertical axis of the turntable 5 (column 3, lines 21-27).

There is no disclosure whatever in Bielfeldt of a low pressure molding method for forming an elongated molded article in which molten resin is injected into a vertically disposed single mold

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cavity having a plurality of vertically disposed resin supply ports, whereby to facilitate low pressure molding of a resin article without the need of high pressure mold clamping forces. On the contrary, that teaching or suggestion comes only from the present application and constitutes an important element or aspect of the present invention.

A comparison of the Bielfeldt reference and the present invention are set forth below in tabular form in Attachment A and also in sketches in Attachment B hereto.

In view of the extensive amendments to independent Claim 10, it is respectfully submitted that the claims now in the application are neither anticipated nor rendered unpatentably obvious by the newly cited Bielfeldt reference.

Reconsideration is respectfully requested of the rejection of Claim 12 under 35 U.S.C. 103(a) as being unpatentable over Bielfeldt in view of Makinson, et al. (USP 4,124,343).

The deficiencies of the Bielfeldt reference are discussed above.

The Examiner's secondary reference of Makinson, et al. is concerned with an injection molding device which is movable vertically to register with a selected mold. The Examiner relies upon the secondary reference of Makinson, et al. to show a resin detection sensor for detecting a charging amount of molten resin. However, it is respectfully submitted that Mackinson, et al. fails to disclose injection molding of elongated articles using low pressure injection of molten resin into a vertically disposed single mold cavity having a plurality of vertically disposed resin supply ports. On the contrary, Makinson, et al. discloses moving the resin injector to molds having only a single resin supply port. It is therefore apparent that Makinson, like Bielfeldt, are not concerned with the same problem as the present invention.

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Unobviousness can reside in the discovery of the cause of a problem, the solution of which employs a combination of old elements, *In re Spinnoble*, 160 USPQ 237 (CCPA 1969), even though by hindsight the cause of the problem, once recognized, may suggest a solution to the problem. *Ex parte Campbell, et al.*, 211 USPQ 575 (POBA 1980). Further, a reference which performs a step of a claimed process for a different purpose and does not recognize the problem solved in applicant's process does not render the process obvious. *Ex parte Wisdom, et al.*, 184 USPQ 822 (POBA 1973).

The present invention is concerned with the production of an elongated molded article using a low pressure injection molding method to minimize clamping forces on the mold. In contrast, the Bielfeldt reference is concerned with an injection molding machine for injecting a resin into a multi-stage molding unit and the Makinson, et al. reference is concerned with an injection molding device in which the injector is moved vertically to register with a selected mold. It is therefore apparent that neither of the Examiner's references are concerned with the same problem to be solved by the present invention. Moreover, neither of the Examiner's references, taken individually or in combination, disclose the method now called for in the claims herein. For these reasons, it is respectfully submitted that the rejection fails as a matter of law in view of the above authorities. Withdrawal of the rejection is accordingly respectfully requested.

Moreover, for a combination of references to render an invention obvious, it must be obvious that their teachings can be combined. *In re Avery*, 186 USPQ 161 (CCPA 1975). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. *In*

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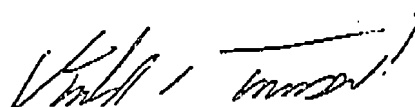
*re Fine*, 5 USPQ 2d 1596 (CAFC 1988).

In the present case there is no teaching, suggestion or incentive in either of the Examiner's combination of references that they can be combined in the manner suggested by the Examiner. For this reason, it is respectfully submitted that the rejection fails in view of the above authorities as a matter of law. Consequently, the Examiner would be justified in no longer maintaining the rejection. Withdrawal of the rejection is accordingly respectfully requested.

In view of the foregoing, it is respectfully submitted that the application is now in condition for allowance, and early action and allowance thereof is accordingly respectfully requested. In the event there is any reason why the application cannot be allowed at the present time, it is respectfully requested that the Examiner contact the undersigned at the number listed below to resolve any problems.

Respectfully submitted,

TOWNSEND & BANTA.



Donald E. Townsend  
Reg. No. 22,069

Date: May 7, 2007

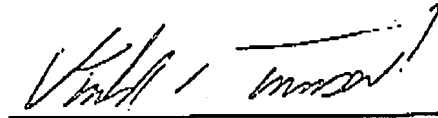
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TOWNSEND & BANTA  
c/o PortfolioLP  
P.O. Box 52050  
Minneapolis, MN 55402  
(202) 220-3124

**CERTIFICATE OF TRANSMISSION**

I hereby certify that this 12-page Amendment, as well as the 1-page Attachment A and 1-page Attachment B, in patent application Serial No. 10/632,844, filed August 4, 2003, is being facsimile transmitted to the United States Patent and Trademark Office (Fax No. 571-273-8300) on May 7, 2007.



Donald E. Townsend  
Reg. No. 22,069

## ATTACHMENT A

## 1. Comparison of Bielfeldt and the present invention

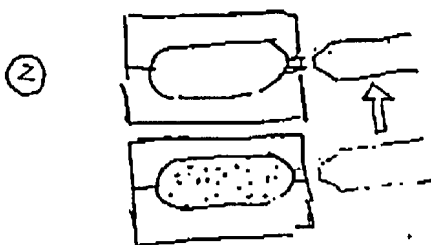
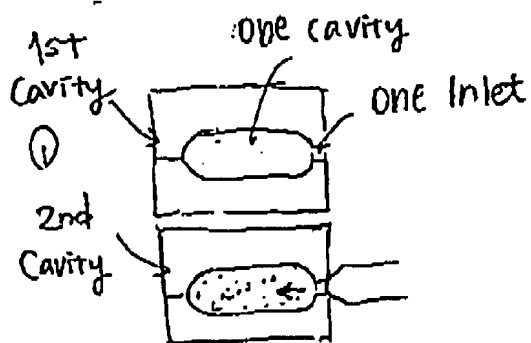
Bielfeldt		The present invention
Injection by swinging the nozzle up and down so as to inject to the inlets at different hights.	=	Injection by moving the injection unit up and down remaining a parallel state, so as to inject to more than two inlets.
Structure of injecting to a plurality (two) of respective cavities.	≠	It injects to one long cavity, and it has different technical idea from Bielfeldt.
Each cavity is filled by only one injection, and it does not have an idea like the present invention.	≠	The long cavity is filled by injecting sequentially by moving the nozzle, so that the injection pressure can be lower at the each inlet than the ordinary filling method.

※Bielfeldt aims to solve how to inject to cavities at different heights by one injection unit, and does not aims to solve the present invention's aim, that is to form a long molded article by low injection pressure. Therefore, Bielfeldt does not disclose to inject to a plurality of inlets of the long cavity sequentially from one end to the other.

2.

Bielfeldt only discloses an idea of "one inlet to one cavity" (Please see the drawing and the underlines on the reference).

## ATTACHMENT B

BielfeldtThe present invention